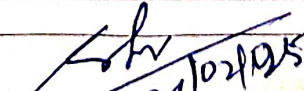


LESSON PLAN FOR Energy Conversion-I [Th1]

Discipline: Electrical Engineering	Semester: 4th	Name of the Teaching Faculty: Deepak Kumar Roul (Lect Elect)
Subject: Energy Conversion-I	Numbers of classes per week: 5	Semester from date: 04.02.2025 to date: 17.05.2025 No. of weeks: 12
week	Class day	Theory
1st	1st	Operating principle of generator Constructional features of DC machine
	2nd	Yoke, Pole & field winding, Armature, Commutator. Armature winding, back pitch, Front pitch, Resultant pitch and commutator-pitch.
	3rd	Simple Lap and wave winding, Dummy coils.
	4th	Different types of D.C. machines (Shunt, Series and Compound)
	5th	Derivation of EMF equation of DC generators. (Solve problems)
2nd	1st	Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems
	2nd	Armature reaction in D.C. machine
	3rd	Commutation and methods of improving commutation. Role of inter poles and compensating winding in commutation.
	4th	Application of different types of D.C. Generators. Concept of critical resistance and critical speed of DC shunt generator
	5th	Concept of critical resistance and critical speed of DC shunt generator
3rd	1st	Conditions of Build-up of EMF of DC generator
	2nd	Parallel operation of D.C. Generators. Uses of D.C. generators
	3rd	Basic working principle of DC motor Significance of back EMF in D.C. Motor
	4th	Voltage equation of D.C. Motor and condition for maximum power output (simple problems)
	5th	Derive torque equation (solve problems) Characteristics of shunt, series and compound motors and their application
4th	1st	Starting method of shunt, series and compound motors. Speed control of D.C. shunt motors by Flux control method. Armature voltage control method. Solve problems
	2nd	Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
	3rd	Determination of efficiency of D.C. Machine by Brakett test method (solve numerical problems)
	4th	Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems)
	5th	Losses, efficiency and power stages of D.C. motor (solve numerical problems) Uses of D.C. motors
5th	1st	Working principle of transformer. Constructional feature of Transformer
	2nd	Arrangement of core & winding in different types of transformer. Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.

	3rd	Explain types of cooling methods State the procedures for Care and maintenance.
	4th	EMF equation of transformer. Ideal transformer voltage transformation ratio
	5th	Operation of Transformer at no load, on load with phasor diagrams.
	5th	Equivalent Resistance, Leakage Reactance and Impedance of transformer.
6th	1st	Equivalent Resistance, Leakage Reactance and Impedance of transformer.
	2nd	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load.
	3rd	To explain Equivalent circuit and solve numerical problems. Approximate & exact voltage drop calculation of a Transformer
	4th	Regulation of transformer.
	5th	Different types of losses in a Transformer. Explain Open circuit and Short Circuit test. (Solve numerical problems)
7th	1st	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)
	2nd	Explain All Day Efficiency (solve problems)
	3rd	Determination of load corresponding to Maximum efficiency.
	4th	Parallel operation of single phase transformer
	5th	Constructional features of Auto transformer.

8th	1st	Working principle of single phase Auto Transformer.
	2nd	Comparison of Auto transformer with two winding transformer (saving of Copper).
	3rd	Uses of Auto transformer. Explain Tap changer with transformer (on load and off load condition)
	4th	Explain Current Transformer and Potential Transformer
	5th	Define Ratio error, Phase angle error, Burden
9th	1st	Uses of C.T. and P.T.
	2nd	Tutorial
	3rd	Tutorial
	4th	Tutorial
	5th	Tutorial
	4th	Tutorial
	5th	Tutorial
10th	1st	Tutorial
	2nd	Tutorial
	3rd	Tutorial
	4th	Tutorial
	5th	Tutorial
11th	1st	Tutorial
	2nd	Tutorial
	3rd	Tutorial
	4th	Tutorial
	5th	Tutorial


 HOD (ELECTRICAL)
 GOVT. POLY.
 GAJAPATI